(54) **GRADATION PROCESSING METHOD AND DEVICE**
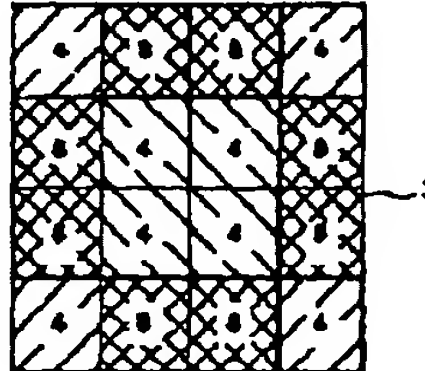
(57) Abstract:

PROBLEM TO BE SOLVED: To provide gradation processing method and device capable of producing halftone images by using the dither matrix of a size smaller than a conventional threshold matrix for M-fold dense images and reducing a data processing amount (time) as well while utilizing the merit of an M-fold dense image technique capable of smooth gradation expression.

SOLUTION: Even while using a triple dense image technique, the dither matrix 2 is not divided into three dot areas, the pixels are grouped into first, second and third groups for each one in equal distance from the center point of the matrix, and for the respective groups, the dither value of all the pixels is defined by a serial number (0, 1, 2, 3,..., n)-M×N (M=3 in tripe dense images, N=a total pixel number belonging to the group before the pertinent group). Thus, the gradation expression of the similar gradation number (n)=0-48 is made possible by the size smaller than the conventional threshold matrix using the triple dense image technique.

(a)

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

(b)

(c)

0-12M	1-4M	2-4M	1-12M
0-4M	0	1	5-4M
2-4M	3	2	4-4M
3-12M	6-4M	5-4M	2-12M

(54) MULTILEVEL IMAGE BINARIZING DEVICE

(57) Abstract:

PURPOSE: To realize a multilevel image binarizing device in which pseudo gradation data with excellent image quality are obtained at a screen angle other than 0°.

CONSTITUTION: This multilevel image binarizing device uses a threshold level matrix 1 to binarize a received multilevel image thereby obtaining pseudo gradation data, the threshold level matrix 1 is constituted of low value sub matrices (1st and 2nd submatrices 11, 12) expressing dots whose dot area rate is 50% or below and high value submatrices (3rd and 4th submatrices 13, 14) expressing dots whose dot area rate is larger than 50% alternately in the longitudinal and lateral direction in a high multilevel image and a threshold level of a matrix corresponding to each submatrix arranged diagonally is selected to be closely by a prescribed relation.